

REMARKS

Claims 1-19 are pending. No claims have been amended, added, or canceled in this response. Claims 1-19 therefore will be pending upon the filing of this response.

Claims 1, 2, 6-12, and 16-19 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. patent no. 6,196,871 ("the Szu patent") in view of U. S. patent no. 5,893,725 ("the Bhansali patent"). Claims 3-5 and 13-16 have been rejected under 35 U.S.C. § 103(a) as being obvious over the Szu patent in view of U.S. patent no. 5,086,966 ("the Melton patent"). Applicant respectfully traverses these rejections.

Claim 1 of present application recites, *inter alia*, a retentive structure comprising a base material and a plating material disposed over at least a portion of the base material; wherein at least some of the plating material separates from the base material at a reflow temperature of the plurality of solder masses.

The Examiner has characterized the base (22) of the posts (18) of the Szu patent as a base material as recited in claim 1 of the present application. The Examiner has characterized the leg (24) of the posts (18) as a plating material as recited in claim 1. Office action at pg. 2, lines 19, 20.

The Szu patent states that the posts (18) are "made of an adhesive fusible material, such as thermoplastic, which melts easily after proper heating." The Szu patent at col. 3, lines 10-12. The Szu patent neither teaches nor suggests that the posts (18) comprise a base *material* and a plating *material* disposed over at least a portion of the base material, in contradistinction to claim 1 of the present application. The Bhansali and Melton patents likewise are silent regarding this limitation.

Applicant therefore respectfully submits that claim 1 of the present application is patentably distinct from the combination of the Szu, Bhansali, and /or Melton patents. Withdrawal of the rejection of claim 1 (and claims 2-7, 18, and 19, which depend therefrom) under 35 U.S.C 103(a) is respectfully requested.

Claim 8 of present application recites an electrical connector comprising, *inter alia*, a retentive structure extending from the surface of the housing . . . , the retentive structure made with a material that enables continued affixation of the electrical connector to a circuit substrate at temperatures sufficient to initiate reflow of the plurality of solder masses.

The Examiner has not asserted that the Szu patent teaches or suggests a retentive structure made with a material that enables continued affixation of an electrical connector to a circuit substrate at temperatures sufficient to initiate reflow of a plurality of solder masses.

The Examiner has stated that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the reflowed solder joint composition of Bhansali for the solder composition of Szu, for the purpose of strengthening the solder joint.” Office action at p. 3, lines 3-5. Applicant believes this statement refers to the material used to form the retentive structure recited in claim 8 of the present application. Applicant therefore disagrees with the statement, because the Szu patent neither teaches nor suggests a retentive structure formed from, or used in conjunction with a solder joint composition.

The Examiner has characterized the posts (18) disclosed in the Szu patent as retention structures as recited in claim 1 of the present application. Office action at pg. 2, line 17. The posts (18), as discussed above, are made of an adhesive fusible material, such as thermoplastic, which melts easily after proper heating. The Szu patent neither teaches nor suggests the use of the posts (18) in conjunction with a solder joint composition. In fact, forming the posts (18) from an adhesive fusible material such as thermoplastic actually teaches away from the use of solder joints in conjunction with the posts (18), because adhesive fusible materials such as thermoplastics are unsuitable for use in forming or mating with solder joints.

Applicant therefore respectfully submits that one of ordinary skill in the art would not have been motivated at the time of the invention to form the thermoplastic posts (18) of the Szu patent from a solder joint composition disclosed in the Bhansali patent to arrive at the retentive structure recited in claim 8 of the present application. Applicant therefore respectfully submits that claim 8 is patentably distinct from the combination of the Szu and Bhansali patents.

Moreover, the Bhansali patent neither teaches nor suggests a retentive structure extending from the surface of a housing of an electrical connector. The Bhansali patent discloses the use of pins (20) to mount a substrate (14) on a printed circuit board (23). The pins (20) are covered with a layer of nickel-phosphorus, and a layer of gold. The Bhansali patent also discloses contact pads (16) covered with a layer of nickel-boron, and a layer of gold. The contact pads (16) are reflowed with solder bumps (30) on an integrated circuit

(12), to form a plurality of solder joints that attach the integrated circuit (12) to the substrate (14). The Bhansali patent at col. 2, lines 11-47, and Figure 1.

The Examiner has stated in the office action that gold and nickel have higher melting points than lead and tin. Office action at pg. 3, lines 1, 2. The joints that attach the pins (20) to the substrate (14) and the printed circuit board (23), and the joints that attach the integrated circuit (12) to the substrate (14) of the Bhansali patent each include gold and nickel. The two sets of joints thus appear to have similar melting points.

Applicant therefore respectfully submits that the Bhansali patent neither teaches nor suggests a retentive structure made with a material that enables continued affixation of an electrical connector to a circuit substrate at temperatures sufficient to initiate reflow of the plurality of solder masses. Applicant respectfully submits that claim 8 is patentably distinct from the combination of the Szu and Bhansali patents for this additional reason.

Withdrawal of the rejection of claim 8 under 35 U.S.C 103(a) is respectfully requested in view of the above remarks.

Claim 9 of present application recites an electrical connector comprising, *inter alia*, a retentive structure extending from a surface of the housing for effecting a non-electrical connection with a circuit substrate, the retentive structure made with a material that alters a physical property of a solder composition in contact with the retentive structure at a reflow temperature of such a solder composition.

The Szu patent, as discussed above in relation to claim 8, teaches away from the use of a solder composition in contact with a retentive structure.

The Bhansali patent neither teaches nor suggests an electrical connector comprising a retentive structure extending from a surface of a housing for effecting a non-electrical connection with a circuit substrate. Moreover, the Bhansali patent does not disclose any structure that can be construed as a retentive structure made with a material that alters a physical property of a solder composition in contact with the retentive structure at a reflow temperature of such a solder composition.

Applicant therefore respectfully submits that claim 9 is patentably distinct from the combination of the Szu and Bhansali patents. The Melton patent likewise is silent regarding the above-noted limitations of claim 9. Withdrawal of the rejection of claim 9 (and claims 10-16, which depend therefrom) under 35 U.S.C 103(a) is respectfully requested.

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PATENT


Claim 17 of present application recites an electrical connector comprising, *inter alia*, solder masses extending from a surface of the housing for electrically connecting the electrical connector to a circuit substrate; and a retentive structure extending from the surface of the housing and . . . comprising a material such that after initial affixation of the solder masses and retentive structure with a circuit substrate, affixation at the solder masses is compromised, due to an elevated temperature, prior to affixation at the retentive structure.

The joints that attach the pins (20) to the substrate (14) and the printed circuit board (23), and the joints that attach the integrated circuit (12) to the substrate (14) of the Bhansali patent appear to have similar melting points, as discussed above in relation to claim 8. Applicant therefore respectfully submits that the Bhansali patent neither teaches nor suggests the above-noted limitations of claim 17. The Szu patent likewise is silent regarding these limitations.

Applicant therefore respectfully submits that claim 17 is patentably distinct from the combination of the Szu and Bhansali patents. Withdrawal of the rejection of claim 17 under 35 U.S.C 103(a) is respectfully requested.

A notice of allowability is respectfully requested.

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